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| APPLICATION NO.         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------|-------------|----------------------|---------------------|------------------|
| 10/808,343              | 03/25/2004  | Koji Muranaka        | 0756-7271           | 5449             |
| 31780                   | 7590        | 06/15/2005           |                     | EXAMINER         |
| ERIC ROBINSON           |             |                      |                     | QUACH, TUAN N    |
| PMB 955                 |             |                      |                     |                  |
| 21010 SOUTHBANK ST.     |             |                      | ART UNIT            | PAPER NUMBER     |
| POTOMAC FALLS, VA 20165 |             |                      | 2826                |                  |

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                                      |
|------------------------------|------------------------|--------------------------------------|
| <b>Office Action Summary</b> | Application No.        | Applicant(s)                         |
|                              | 10/808,343             | MURANAKA, KOJI<br><i>(Signature)</i> |
|                              | Examiner<br>Tuan Quach | Art Unit<br>2826                     |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 30 March 2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-19 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 25 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In these claims, "for example" is erroneous and render the scope of the claim indeterminate and should be deleted.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Claims 1, 2, 14, 15, 17, 18 rejected under 35 U.S.C. 102(b) as being anticipated by Gaynor.

Regarding claim 1, Gaynor 6,329,062 teaches a semiconductor device comprising laminate structure including an organic insulating film (the silica/binder, e.g., layer 16) in close contact with a hydrophobic surface of a inorganic insulating film including nitrogen and silicon (including silicon nitride or silicon oxynitride, e.g., layer 15). See column 2 line 55 to column 3 line 11, column 4 line 52 et seq., column 8 lines 35 to column 10 line 20. The surface of the silicon nitride would be hydrophobic as it is treated with the HMDS for improved adhesion. Such treatment would cause the film being treated to be hydrophobic and improve adhesion as evidenced at column 10, lines 16-20.

Regarding claim 2, the inorganic insulating layer being layer 15 and the organic layer being 16 as delineated above.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 11-13, 16, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaynor with Wolf.

Regarding claims 3 and 4, a first inorganic insulating layer on semiconductor layer corresponds to the layers being formed on an underlying silicon substrate, e.g., as in Fig. 2A, column 1 lines 6-16, of the integrated circuit devices including an insulating layer isolating the elements 14 in Fig. 2A and as shown in Wolf, page 282, fig. 4-60(c). Regarding claim 4, the hydrogen concentration in the second inorganic insulating film being higher than hydrogen concentration in the first inorganic insulating layer would have been obvious as such would correspond an obvious alternative and as hydrogen would be more likely to be incorporated in the nitride layer during deposition, e.g., page

274. Regarding claims 11-13, the selection and optimization of nitrogen and oxygen to be more than 25% would correspond to silicon oxynitride of desired composition and characteristics of both the oxides and nitrides, Wolf, page 275. Regarding claim 16, the inorganic layer being silicon nitride or silicon oxynitride is taught in Gaynor above. Regarding claim 19, the organic insulating layer is met, as shown in Gaynor above, column 4 lines 59-61, column 5 lines 1-5.

Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaynor singly or with Wolf as applied to claims 1-2 and 3 above, respectively, and further with Veerasamy et al.

The reference applied above does not explicitly recite the contact angle in these claims.

Veerasamy et al. 2003/0031877 A1 teaches high contact angle of 70° or more, e.g., the abstract, [002]-[006].

It would have been obvious to one skilled in the art to have employed high contact angle including of those magnitude claimed since such is conventional and advantageous as evidenced by Veerasamy et al.

Claims 17-19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaynor singly or with Wolf as applied to claims 1, 2, and 3 above, and further in view of Yokono et al.

Regarding the various organic polymer delineated, although Gaynor does not enumerate all those cited, such would have been conventional and obvious as

evidenced by Yokono et al., 4,714,636 column 4 lines 38-41. Photosensitive or nonsensitive correspond to two obvious alternatives and would have been obvious.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan Quach whose telephone number is 571-272-1717. The examiner can normally be reached on M - F from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Tuan Quach  
Primary Examiner